

What is claimed is:

1. A spectral imaging device with a narrow band spectrally tunable light source for obtaining multi-spectral images of a target, said device comprising:
  - A) a tunable optical parametric oscillator for producing short pulses of light at selected narrow band wavelengths within a broad spectral range,
  - B) a short pulse laser driving said optical parametric oscillator,
  - C) one or more optical components for conveying or directing said short pulses of light to said target,
  - D) a camera comprising a many pixel array detector, said camera being positioned to obtain multi-spectral images of said target.
2. The device as in Claim 1 wherein said one or more optical components for conveying or directing said short pulses of light to said target is one or more optical fibers.
3. The device as in Claim 1 wherein said one or more optical components for conveying or directing said short pulses of light to said target comprises refractive or reflective optical elements.
4. The device as in Claim 1 wherein said camera is a gated camera synchronized with said optical parametric oscillator to maximize signal to noise ratio.
5. The device as in Claim 1 wherein the optical parametric oscillator comprises a type I bulk non-linear crystal.
6. The device as in Claim 1 wherein the optical parametric oscillator comprises a type II bulk non-linear crystal.
7. The device as in Claim 1 and further comprising additional non-linear optical devices for extending spectral ranges of said device.
8. The device as in Claim 1 wherein said camera is positioned to monitor reflections from said target.
9. The device as in Claim 1 wherein said camera is positioned to monitor transmissions through said target.
10. The device as in Claim 1 wherein said camera is positioned to monitor fluorescence from said target.

11. The device as in Claim 1 wherein said camera is positioned to monitor dichroism of said target.
12. The device as in Claim 1 wherein said target is a pharmaceutical product.
13. The device as in Claim 1 wherein said target is an array of samples containing identical or different materials.
14. The device as in Claim 1 wherein said OPO incorporates a periodically polled material, which can be operated in a pulsed or continuous mode.